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Case Report

Thyroid Tuberculosis Presenting as Multinodular Goiter with Suspicious Sonographic Features: A Case Report

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ABSTRACT

Introduction: Thyroid tuberculosis is an exceedingly rare form of extrapulmonary tuberculosis, even in endemic regions, owing to the intrinsic resistance of thyroid tissue to mycobacterial colonization. Its clinical and radiological presentation is nonspecific and frequently mimics thyroid neoplasia, making preoperative diagnosis particularly challenging.

Case presentation: We report the case of a 62-year-old woman, with no significant past medical history, presenting with a one-year history of a painless anterior cervical swelling, without compressive symptoms or constitutional signs. She was clinically and biologically euthyroid. Cervical ultrasound revealed multiple thyroid nodules, two of which were classified as EU-TIRADS 5, raising suspicion of malignancy. The patient underwent thyroid lobectomy, and histopathological examination revealed granulomatous inflammation with caseating necrosis, establishing the diagnosis of thyroid tuberculosis. The postoperative course was uneventful. The patient was referred for standard antituberculous therapy, with an uneventful one-year clinical and biological follow-up.

Conclusion: Thyroid tuberculosis should be considered in the differential diagnosis of suspicious thyroid nodules, particularly in tuberculosis-endemic areas, even in the absence of systemic symptoms. Histopathological examination remains essential for diagnosis, as clinical and radiological features cannot reliably distinguish this entity from thyroid malignancy.

Keywords: Thyroid tuberculosis; Thyroid nodule; EU-TIRADS; Granulomatous inflammation; Extrapulmonary tuberculosis

Introduction

Extrapulmonary tuberculosis (EPTB) accounts for approximately 15–20% of all tuberculosis cases worldwide, most frequently affecting lymph nodes, pleura, bone, and the genitourinary tract[1]. Thyroid involvement, in contrast, is exceptionally rare, occurring in less than 1% of tuberculosis cases even in endemic regions[1,2]. This marked resistance of the thyroid gland to mycobacterial infection is thought to result from its rich vascular and lymphatic supply, its fibrous capsule, and the bactericidal properties of iodine-rich colloid[1,2].

Clinically, thyroid tuberculosis presents with highly variable and nonspecific features, ranging from a solitary nodule to

multinodular goiter, diffuse gland enlargement, or, more rarely, a cold abscess, and may occasionally be associated with thyroid dysfunction[2,3]. This clinical heterogeneity, combined with the disease's rarity, means that thyroid tuberculosis is seldom considered in the initial differential diagnosis of a thyroid mass, which is instead dominated by far more common entities such as multinodular goiter, thyroiditis, and thyroid carcinoma[3,4].

Ultrasound is central to the initial evaluation of thyroid nodules, and the European Thyroid Association's EU-TIRADS classification is widely used to stratify malignancy risk based on sonographic features such as echogenicity, shape, margins, and the presence of microcalcifications[5]. However, this system cannot reliably distinguish tuberculous involvement from thyroid malignancy, as both may present with suspicious sonographic features, underscoring the necessity of histopathological confirmation[4,5].

Through this case report, we aim to illustrate the diagnostic challenges posed by thyroid tuberculosis when it mimics a suspicious multinodular goiter, and to emphasize the importance of histopathological examination in establishing the diagnosis, even in the absence of systemic or compressive symptoms.

Case Presentation

A 62-year-old woman, with no significant past medical history, presented with a one-year history of a painless anterior cervical swelling. The mass was non-tender and showed no signs of local inflammation. She denied any associated compressive symptoms, such as dyspnea, dysphagia, or dysphonia, and her general condition remained stable, with no constitutional symptoms.

On physical examination, an anterior basal cervical mass was noted, mobile on swallowing, suggestive of a thyroid origin.

Laboratory evaluation, including thyroid function tests, showed normal serum levels of triiodothyronine (T3), thyroxine (T4), and thyroid-stimulating hormone (TSH), consistent with a euthyroid state.

Cervical ultrasound demonstrated a thyroid gland of normal size with regular contours and preserved Doppler vascularization. Multiple nodular lesions were identified in both lobes. In the right lobe, a round isoechoic nodule located in the lower pole, with well-defined margins and internal vascularity, measured 11.8 × 9 × 8 mm and was classified as EU-TIRADS 5. A second round, moderately hypoechoic nodule in the inferior pole of the right lobe measured 5 × 5 × 5 mm and was also classified as EU-TIRADS 5. In the left lobe, an oval isoechoic nodule in the medial portion measured 9 × 7.5 mm and was classified as EU-TIRADS 3.

Given the suspicious radiological features, the patient underwent a thyroid lobectomy. Histopathological examination revealed granulomatous inflammation with caseating necrosis, confirming the diagnosis of thyroid tuberculosis. The postoperative course was uneventful, with no reported complications.

The patient was subsequently referred for standard antituberculous therapy and placed under regular clinical and biological follow-up for one year, which remained uneventful, with no abnormalities detected.

Discussion

Thyroid tuberculosis, whether primary or secondary to a distant focus, remains an exceptionally rare entity, even in tuberculosis-endemic countries such as Morocco[1,2]. The thyroid gland's relative resistance to mycobacterial infection has classically been attributed to its rich vascular and lymphatic supply, its fibrous capsule, and the bactericidal properties of iodine-rich colloid - factors shared with other tissues rarely affected by tuberculosis, such as the heart, striated muscle, and pancreas[2,3].

The clinical presentation of thyroid tuberculosis is notably heterogeneous and can mimic almost any thyroid disorder. Described patterns include a solitary nodule, multiple lesions resembling miliary tuberculosis, diffuse gland enlargement due to caseating granulomas, cold abscess formation with sinus tracts, and a chronic fibrosing form difficult to distinguish from subacute thyroiditis[3]. In our patient, the presentation as a longstanding, painless multinodular goiter without inflammatory or compressive symptoms illustrates this diagnostic ambiguity, as such a presentation is far more commonly associated with benign nodular disease or thyroid carcinoma than with a mycobacterial infection[1,4].

Ultrasound, while essential in the initial workup of thyroid nodules, cannot reliably differentiate tuberculous involvement from malignancy. In our patient, two of the three nodules were classified as EU-TIRADS 5 - the highest-risk category, associated with a malignancy probability of up to 87% - based on features such as marked hypoechogenicity and round shape[5]. This overlap between the sonographic appearance of thyroid tuberculosis and malignant nodules is well documented and frequently leads to surgical management being undertaken primarily to exclude carcinoma, with the diagnosis of tuberculosis established only on postoperative histopathological examination, as occurred in our case[1,4].

Histopathological examination remains the diagnostic cornerstone, typically demonstrating necrotizing epithelioid granulomas with Langhans-type giant cells, as observed in our patient. Demonstration of acid-fast bacilli by Ziehl-Neelsen staining would further support the diagnosis, but this stain is frequently negative on tissue sections, and bacteriological or molecular confirmation is not always achieved[3]. In such cases, as in ours, the diagnosis of tuberculosis rests on the histological picture in an appropriate clinical context, which is generally considered sufficient to justify initiation of antituberculous treatment.

Regarding management, once the diagnosis of thyroid tuberculosis is histologically confirmed, treatment relies on standard antituberculous chemotherapy, and no further thyroid surgery is required beyond the diagnostic procedure already performed. This is illustrated by our patient's favorable outcome, with an uneventful clinical and biological course throughout one year of follow-up. This case also underscores a broader diagnostic reality: because thyroid tuberculosis cannot be reliably distinguished from malignancy on clinical or radiological grounds alone, many patients, like ours, undergo surgery that later proves to have been performed for a medically treatable infectious disease rather than cancer[1,4].

Conclusion

Thyroid tuberculosis is an exceptionally rare form of extrapulmonary tuberculosis that should nonetheless be considered in the differential diagnosis of a suspicious thyroid nodule or multinodular goiter, even in the absence of systemic symptoms or known tuberculous contact. Its clinical and sonographic features overlap substantially with those of thyroid malignancy, and no single test allows a reliable preoperative distinction between the two. Histopathological examination remains indispensable for diagnosis, and once confirmed, standard antituberculous therapy alone is sufficient to achieve favourable outcomes, without the need for further thyroid surgery.

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